MODELS
65-66-650

Majestic
"MIGHTY MONARCH OF THE AIR"

6 TUBE
3 BAND RADIO

INSTRUCTION MANUAL

INSTALLATION

SHIPPING BOLTS

Underneath the shelf which holds the radio in the console model are two bolts with red nuts which are used for shipping purposes only. Remove the bolts so that the radio is floating freely on its rubber supports.

AERIAL AND GROUND

For best results an outdoor antenna, approximately sixty feet long including the lead in wire, should be used. An inside antenna will prove satisfactory in large cities provided it is not installed in a building of steel construction. In all cases, however, the receiver will perform better when an outdoor antenna is used. Install the antenna as high as possible and be sure to avoid running the wire through trees or near metal obstructions upon which it can rub. The antenna should also be installed at right angles to power lines, street car lines and any other electrical apparatus if possible. The receiver is designed to operate efficiently on foreign broadcasting stations and short wave bands with the conventional type aerial. For those who are especially interested in short wave reception, however, slightly less noise will be heard on the short wave bands if a noise eliminating antenna is used. The receiver will operate without a ground connection but it is advisable to use a good ground to insure quiet noise free reception. The ground wire should be connected to a water pipe or radiator or a pipe driven into the ground. When it is connected to the radiator or water pipe be sure that the paint is first scraped from the pipe so that a good metallic contact is obtained. The antenna and ground wires should be connected to the two terminals on the back of chassis marked A for antenna and G for ground.

It is extremely important that a good antenna and ground be used if the receiver is to operate properly. Connections should all be clean and tight, and periodically an inspection should be made to see whether the wires are corroded from the affects of the weather. It is not advisable to use an old antenna on a new set.

TUBES

Your radio set comes to you with the tubes already in the sockets. When it becomes necessary to replace the tubes, the type and position of each tube is shown in figure 1. A similar tube socket guide is also pasted in the cabinet. The base of the tubes have a guide pin so that they can not be inserted incorrectly. Be sure that you rotate the tube before attempting to insert it so that the guide pin drops into the center hole in the socket. Be sure that the tubes are pressed tightly in place and that the flexible wires with grid clips on the end are placed over the caps of the tubes which appear as shown in the illustration.

POWER LINE VOLTAGE

Your radio is designed to operate on 105 to 125 volts, 50 or 60 cycle a.c. supply only. A few sections of the country use other voltage and cycles. If there is any doubt in your mind, do not plug the set in until you first determine the voltage and cycles from your power supply company.

Part No. 16801

HOW TO USE YOUR RADIO

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The sketch shown in figure 1 indicates the various tuning controls. Read carefully how to use each control so you can obtain the fullest benefit from your radio.

TURNING RADIO ON

Turn the on-off switch and volume control (see figure 1) to the right. As the switch is turned on, a click will be heard and the dial will light up. Wait approximately half a minute for the tubes to warm up. To turn the radio off the volume control knob should be turned back to the left until the dial light goes out.

TUNING IN STATIONS

(BROADCAST BANDS)

First turn the band indicator knob to the broadcasting band. This knob does not turn as easily as the others. Next turn the volume control to the right to a position of medium volume. The tuning control knob should then be turned until the station is heard.

TUNING EYE

The tuning eye is mounted at the top of the dial service to indicate when the station is correctly tuned. The tuning knob should be turned back and forth over the station until the dark portion of the eye is at the narrowest point. You will notice that as you tune off a station the dark portion of the eye rapidly broadens. The volume should never be adjusted by tuning slightly off the station. Instead, the best tuning point should always be found by using the tuning eye and volume reduced to the desired level by turning the volume control to the left.

SHORT WAVES

This receiver has two short wave tuning bands. The intermediate band will receive police calls, aeroplanes and amateurs from all parts of the country. The shortest wave band will receive many foreign short wave broadcasting stations and also American short wave stations re-broadcasting chain programs. The tuning and operation on the short wave bands is the same as for the broadcast band except that it is important that the tuning knob be turned very slow. Short wave stations are extremely sharp, particularly the foreign broadcasters because of the great distance, as a result they will be missed unless the receiver is tuned with extreme care. You will notice that the approximate location of the most important foreign broadcasters are shown on the dial.

WAVE BAND INDICATORS
RADIO BEAM TUNING

There are two indicators by which the different bands are shown on your radio. The indicator at the bottom of the dial tells you which band is being used. In addition to make it still easier, the traveling light of the radio beam tuning which serves as a tuning pointer is automatically shifted from one band to the next as the wave band switch is turned.

BALANCE WHEEL TUNING

To aid in easy tuning of foreign stations which require an extremely fine balance of tuning mechanism a balance wheel is used. You will notice that the tuning control has a very soft feel that makes the tuning smooth and easy. The use of the balance wheel makes possible also speedy tuning of the broadcast band when traveling from one station to another. The knob can be spun with the fingers so the pointer will travel quickly from one station on the dial to another. When you use the spinning action, however, never spin the dial hard against the stops at each end of the tuning bands.

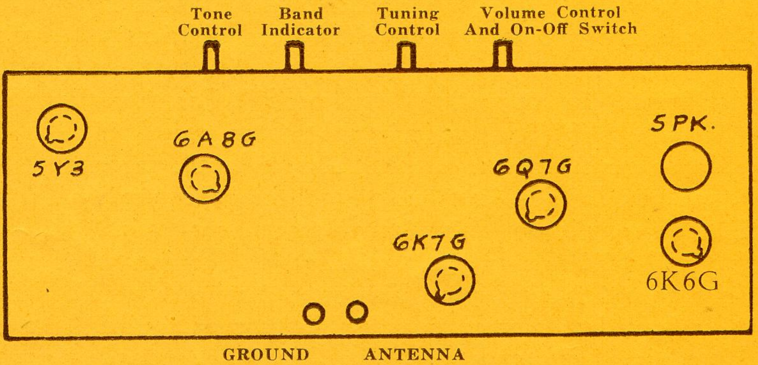


Fig. 1 Tuning Controls and Tube Position

HOW TO USE YOUR RADIO (Continued)

TONE CONTROL

When the station is tuned in, the tone control can be adjusted to any tone desired. By rotating the tone control knob to treble position, full brilliancy of the broadcast is obtained. Usually this position is desirable for speaking. The intermediate position and extreme bass are liked by many people for music.

WEATHER CONDITIONS AFFECT RECEPTION

It is not always possible even on a new set to expect perfect reception. In many cases poor reception may be due to local interference or to weather conditions. We will briefly discuss some of the conditions that can affect reception.

STATIC

Static is usually due to local thunder storms which shows itself as a series of clicks and cracks. It is of course more prevalent during the summer months and in some localities may make reception of distant stations quite bad.

LOCAL INTERFERENCE

Local interference is sometimes troublesome in radio. It is found most frequently when the receiver is located close to a power line or street car wires. It can also be caused by ex-ray machines, electric fans, dirty light socket contacts, vacuum cleaners, and electric refrigerators. Most electrical appliances when in good condition will not cause interference to your radio. However, when they begin to get old and contacts become loose or corroded, they will often cause loud cracking noises in your radio. Local interference can be reduced and sometimes can be eliminated by keeping the antenna and also the leadin away from electrical apparatus or by the use of a special noise eliminating antenna.

Where the trouble is very serious it may be advisable to call in your local service man to locate the source of the noise.

AUTOMATIC VOLUME CONTROL

Your receiver is equipped with an automatic volume control which tends to keep the stations volume from fading. For this reason as the dial indicator is tuned from one station to another static will increase substantially between stations. This only indicates that the automatic volume control is operating properly. Do not confuse it with local interference.

FADING

Fading will be noticed more particularly on distant stations. It consists of the station changing its volume from high to low. If the station is fading badly the automatic volume control may not be able to hold the volume constant. When this occurs a different station should be tuned in.

STATION INTERFERENCE

On the standard broadcast band, there are as many as six stations operating at one time on a single channel. Although these stations are located in different sections of the country, during good weather conditions they may over-lap one another so that several stations can be heard at the same time. This is especially noticeable on the high frequency end of the broadcast band. This interference often results in stations combining with one another to form a whistle, a high shrill squeal or a deep growl.

CARE REQUIRED FOR BEST OPERATION

There are no adjustments of any kind to be made on the chassis or speaker except those provided for professional service men. It is advisable, however, to occasionally remove the tubes and have them checked at a reputable radio shop. Tubes should be replaced at least one a year if the fullest performance of the receiver is expected.

REPLACING DIAL LAMPS

Three 6.8 volt dial lamps are used. Two lamps are clipped to the bottom of the dial and one is in the traveling indicator. To remove the pilot lamp from the traveling indicator, it should be first rotated slightly to one side of the dial. The light and socket can then be pulled out of its housing. The two lights at the bottom of the dial can be slipped off the clips for replacement.

AJUSTMENTS FOR SERVICE MEN ONLY

ALIGNMENT PROCEDURE

Correct alignment is of extreme importance in all-wave receivers. The receivers are properly aligned at the factory with precision equipment and realignment should not be attempted by the service technician until all other causes of faulty operation are corrected.

In order to properly realign the receiver the following equipment is necessary:

1. A signal generator which will provide an accurately calibrated signal at any frequency from 456 kilocycles to 18 megacycles. The generator should have adjustable signal output.

2. An output audio voltmeter of the low voltage type to be connected across the moving coil of the speaker. This should be capable of providing a readable deflection for relatively low output levels to avoid the effects of overload.

3. An insulated or non-metallic screw driver for the adjustment of trimmers.

I F ALIGNMENT 456 KC

1. Connect the output meter (low scale) across the loud speaker voice coil. Turn the wave band switch to broadcast position. Turn the volume control to its maximum position.

2. Connect the test oscillator ground to chassis and the "hot" lead from the test oscillator to the grid of the 6L7 converter tube through a series .1 Mfd. condenser. Set test oscillator to 456 KC.

3. Adjust I F alignment screws of second I F transformer adjacent to 6F6 power tube to maximum output, reducing output of test oscillator to keep the meter reading on scale as alignment proceeds.

4. Adjust alignment of first I F transformer, (directly behind tuning condenser) to maximum output as described above.

5. Readjust these trimmers for accurate alignment. Always use the lowest possible output from the test oscillator to preclude the possibility of automatic volume control action confusing proper adjustment.

NOTE: Since coils are used in series it is absolutely necessary to align the high frequency bands first, in the order indicated.

FOREIGN BAND 5.7 TO 18.5 MEGACYCLES

1. With test oscillator connected to the antenna and ground terminals through a 400 ohm resistor set oscillator at 16 megacycles.

2. Set the dial scale to 16 megacycles and adjust the oscillator trimmer condenser (C 4) to a resonance using the counterclockwise or low capacity point.

3. Adjust input circuit trimmer (C 5) to maximum response, rocking the gang condenser back and forth a degree or two to obtain proper maximum.

POLICE OR MIDDLE BAND 1.75 TO 5.8 MEGACYCLES

1. With the test oscillator connected as above set the oscillator and dial to 5.5 megacycles.

2. Adjust oscillator trimmer condenser (C 6) for maximum response using the counterclockwise or low capacity point.

3. Adjust input circuit trimmer (C 7) to maximum response rocking the gang condenser as described above.

BROADCAST BAND 535 TO 1800 KC

1. With test oscillator connected to antenna and ground through a 200 Mfd. condenser set oscillator and receiver dial to 1600 kilocycles.

2. Adjust broadcast oscillator trimmer (C 8) to obtain maximum response.

3. Adjust antenna circuit trimmer (C 9) for maximum output.

4. Adjust preselector trimmer (C 10) for maximum output.

5. Set test oscillator and dial to 600 kilocycles and tune in the signal, then adjust broadcast band padding condenser (C 11) for maximum output This padder is mounted on the aluminum coil deck near the panel and is adjusted through a hole provided in the back of the chassis pan. Rock the condenser back and forth a degree or two in order to obtain proper maximum.

6. Repeat the 1600 KC adjustments described above for greater accuracy.

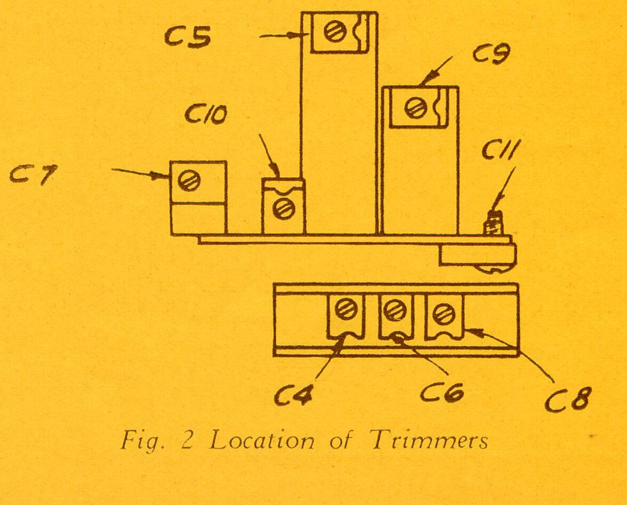
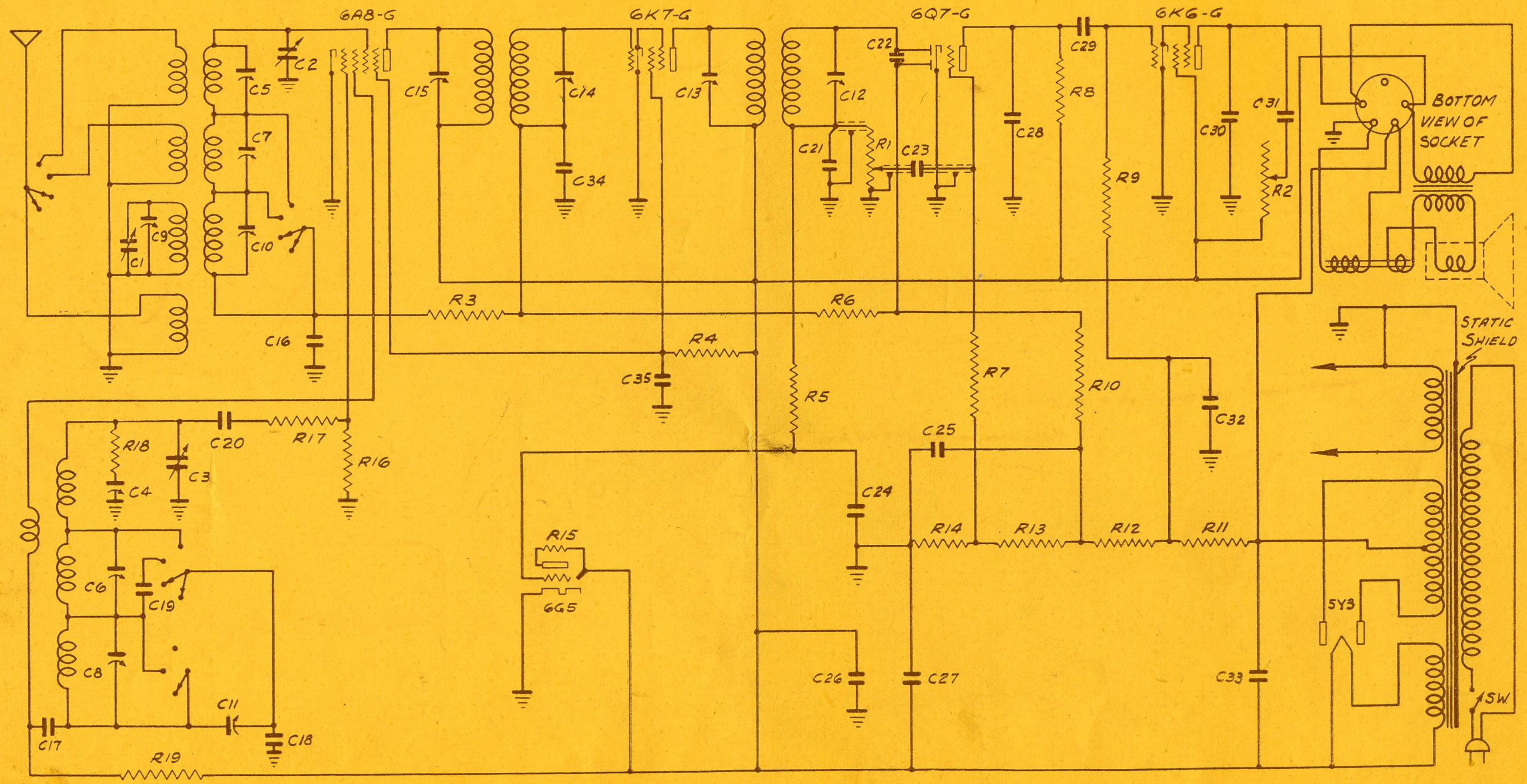


Fig. 2 Location of Trimmers

SCHEMATIC WIRING DIAGRAM



*R-17 removed in later production

REPLACEMENT PARTS MODELS 65-66-650

SCHEMATIC LOCATION	PART No.	DESCRIPTION	PRICE
	15089	Bulb Pilot Light (Edgelight)	.11
	16589	Bulb Pilot Light Frosted (Travelite)	.12
C1 C2 C3	B16461-3	Condenser Variable Gang	2.52
C4 C6 C8	A16473	Condenser Trimmer 3-30 rrt triple strip bakelite	.22
C5 C9 C10	A16474	Condenser Trimmer 3-30 rrt ceramic base	.09
C7	A15246-2	Condenser Trimmer 3-30 rrt bakelite base	.08
C11	A16472	Condenser Variable Padder 340 rrt—960 rrt	.28
C33	B16466	Condenser Wet Electrolytic 16 MFD.—350 Volts	.65
C27	B16467-2	Condenser Wet Electrolytic 8 MFD.—250 Volts regulator	.50
C28	15918	Condenser Mica 100 MMFD. 20% Type O	.07
C21	15928	Condenser Mica 250 MMFD. 20% Type O	.08
C20 C22	15929	Condenser Mica 50 MMFD. 20% Type O	.07
C17	15930	Condenser Mica 2000 MMFD. 20% Type W	.14
C18	15931	Condenser Mica 4300 MMFD. 5% Type W	.26
C19	15932	Condenser Mica 1750 MMFD. 5% Type W	.17
C26	15750	Condenser Tubular .25 MFD.—400 Volts	.15
C16 C34	15752	Condenser Tubular .05 MFD.—200 Volts	.09
C23 C29	15754	Condenser Tubular .01 MFD—400 Volts	.08
C35	15757	Condenser Tubular .1 MFD.—400 Volts	.11
C25	15761	Condenser Tubular .1 MFD.—200 Volts	.10
C24	15763	Condenser Tubular .01 MFD.—200 Volts	.07
C31	15764	Condenser Tubular .03 MFD.—400 Volts	.08
C32	15770	Condenser Tubular .2 MFD.—200 Volts	.11
C30	15771	Condenser Tubular .004 MFD.—600 Volts	.08
R2	B16540-2	Control Tone 150,000 ohms	.46
R1	B16542-2	Control Volume and line switch 1 megohm	.62
	16761	Coil and Mounting Assembly (sold only as complete unit) Model 650	5.00
	16762	Coil and Mounting Assembly (sold only as complete unit) Model 65-66	5.00
	16789	Dial Glass and Pyralin Backing	.53
	16714	Drive and Indicator Assembly	2.10
	B16617	Escutucheon No. 3	1.05
	A16597	Knob (Tune and Wave Band)	.18
	A16598	Knob (Volume and Tone)	.11
R4	15501	Resistor Carbon 25,000+—20% 1 watt	.07
R8	15512	Resistor Carbon 250,000 +—20% ¼ watt	.05
R3	15515	Resistor Carbon 100,000 +—20% ¼ watt	.05
R5 R6 R10 R15	15517	Resistor Carbon 1 meg. +—20% ¼ watt	.05
R9	15520	Resistor Carbon 500,000 +—20% ¼ watt	.05
R16	15511	Resistor Carbon 50,000 +—20% ¼ watt	.05
R13 R14	15557	Resistor Carbon 20,000 +—10% ¼ watt	.05
R19	15558	Resistor Carbon 10,000 +—20% ½ watt	.05
R7	15559	Resistor Carbon 3 meg. +—20% ¼ watt	.05
R17 R18	15601	Resistor Carbon 100 Ohm. +—20% ¼ watt	.05
R12	15602	Resistor Carbon 250,000 +—10% ¼ watt	.05
R11	15603	Resistor Carbon 900,000 +—10% ¼ watt	.05
	15062	Socket Speaker	.08
	15066	Socket 6K7	.11
	15099	Socket 5Y3	.07
	16469	Socket 6Q7	.11
	16537	Socket 6H8	.11
	16632	Socket 6K6	.11
	B16633	Socket 6G5 with leads	.45
	16782	Socket Pilot Light R. H.	.09
	16787	Socket Pilot Light L. H.	.09
	16783	Socket Pilot Light (Travelite)	.11
	C16579	Speaker Models 65-66	3.75
	C16640	Speaker Model 650	5.85
	A16630	Transformer 1st I. F.	.76
	16631	Transformer 2nd I. F.	.86
	C16574-4	Transformer Power 110 Volt 50 or 60 Cycle Models 65-66	2.20
	C16575-5	Transformer Power 110 Volt 50 or 60 Cycle Model 650	2.20
	A1954	Washer Felt (Volume and Tone)	.01
	A1955	Washer Felt (Tune and Wave Band)	.01

VOLTAGE CHART

POSITION	TUBE	Ef	Ek	Eg SCREEN	Eg SUPPRESSOR	Ep TRIODE	Ep PENTODE
Converter	6 A8-G	6.3	3.0	90.0		150.0	220.0
I. F. Amplifier	6 K7-G	6.3	3.0	90.0	Connected to gr'd.		220.0
Detector—AVC	6 Q7-G	6.3	2.0			195.0	
Power Output	6 K6-G	6.3	16.0	220.0	Connected to Cathode in Tube		208.0
Rectifier	5 Y3	5.0					